

Appl. No. 09/919,994
Amdt. dated September 10, 2004
Reply to Office Action of June 10, 2004

Amendments to the Specification:

Please delete the paragraph beginning on page 8, at line 7 and replace this paragraph with the following in accordance with 37 C.F.R. § 1.121.

More particularly, the present invention is directed to a process for reducing the amount of residual aromatic diisocyanate monomer in a polyurethane prepolymer reaction product comprising distilling the product in the presence of at least one inert solvent having a boiling point about 1°C to about 100°C below the boiling point of the diisocyanate monomer at a pressure of 10 torr, wherein the aromatic diisocyanate monomer has a boiling point above about 200°C at 10 torr, the weight ratio of the inert solvent to the ~~residual~~ aromatic diisocyanate monomer ranges from about 90:10 to about 10:90, and the inert solvent comprises about 5% to about 85% by weight of the total weight of the combination of the prepolymer reaction product mixture plus solvents.

Please delete the paragraph beginning on page 8, at line 17 and replace this paragraph with the following in accordance with 37 C.F.R. § 1.121.

In another aspect, the present invention is directed to a prepolymer comprising the reaction product of a polyol and a stoichiometric excess of diphenylmethane diisocyanate monomer at an NCO:OH ratio in the range of from about 2:1 to about 20:1, wherein the unreacted diisocyanate monomer is removed by a process comprising distilling the reaction product in the presence of at least one inert solvent having a boiling point about 1°C to about 100°C below the boiling point of the diphenylmethane diisocyanate monomer at a pressure of

10 torr, wherein the weight ratio of the inert solvent to the ~~residual~~ diphenylmethane diisocyanate monomer ranges from about 90:10 to about 10:90, and the inert solvent comprises about 5% to about 85% by weight of the total weight of the combination of the prepolymer reaction product mixture plus solvents.

Please delete the paragraph beginning on page 9, at line 5 and replace this paragraph with the following in accordance with 37 C.F.R. § 1.121.

In still another aspect, the present invention is directed to a polyurethane elastomer comprising the reaction product of i) a prepolymer terminated with diphenylmethane diisocyanate, said prepolymer comprising no more than about 0.3% free diphenylmethane diisocyanate, preferably less than 0.05% by weight of unreacted diphenylmethane diisocyanate monomer, and at least about 80% of theoretical NCO content for pure ABA structure with ii) a chain extender selected from the group consisting of 1,4-butanediol; 1,3-propanediol; ethylene glycol; 1,6-hexanediol; hydroquinone-bis-hydroxyethyl ether; resorcinol di(beta-hydroxyethyl) ether; resorcinol di(beta-hydroxypropyl) ether; 1,4-cyclohexane dimethanol; an aliphatic triol; an aliphatic tetrol; 4,4'-methylene-bis(2-chloroaniline); 4,4'-methylene-bis(3-chloro-2,6-diethylaniline); diethyl toluene diamine; t-butyl toluene diamine; dimethylthio-toluene diamine; trimethylene glycol di-p-amino-benzoate; methylenedianiline; methylenedianiline-sodium chloride complex; and mixtures thereof, wherein the equivalent ratio of chain extender to prepolymer is in the range of from about 0.7:1 to about 1.2:1.

Please delete the paragraph beginning on page 10, at line 9 and replace this paragraph with the following in accordance with 37 C.F.R. § 1.121.

iii) a stoichiometric excess of diphenylmethane diisocyanate monomer at an NCO:OH ratio in the range of from about 2:1 to about 20:1; wherein unreacted diphenylmethane diisocyanate monomer is removed from said reaction product by a process comprising distilling the reaction product in the presence of at least one inert solvent having a boiling point about 1°C to about 100°C below the boiling point of the diphenylmethane diisocyanate monomer at a pressure of 10 torr, wherein the weight ratio of the inert solvent to the ~~residual~~ diphenylmethane diisocyanate monomer ranges from about 90:10 to about 10:90, and the inert solvent comprises about 5% to about 85% by weight of the total weight of the combination of the prepolymer reaction product mixture plus solvents; with

Please delete the paragraph beginning on page 13, at line 12 and replace this paragraph with the following in accordance with 37 C.F.R. § 1.121.

The inert solvent should have a boiling point slightly lower than that of the diisocyanate monomer(s) under vacuum conditions. For purposes of the present invention, the inert solvent should have a boiling point (bp) of from about 1°C to about 100°C below that of the diisocyanate at a vacuum of 10 torr. As employed herein, a described bp is at 10 torr unless otherwise specified. Preferably, the inert solvent is selected from the group consisting of organic aromatic, aliphatic esters, and mixtures thereof having boiling points in the range of

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from about 115°C to about 214°C at 10 torr. For MDI (bp 215°C), examples of suitable inert solvents include dimethyl phthalate (DMP) (bp 147°C), diethyl phthalate (bp 158°C), diisobutyl adipate (bp 168°C), and dibutyl phthalate (DBP) (bp 192°C). The preferred inert solvents are those that do not react with the prepolymers, do not decompose, and have good miscibility with the diisocyanates and prepolymers.